

SECTION 44

ALTERNATIVE DESIGN CRITERIA NON-FEDERAL AID HIGHWAYS

As an alternative to the overall design policy requirements of this Manual, the current AASHTO Standard Specifications for Highway Bridges, except for the modifications noted below, are required as absolute minimum design specifications for Non-Federal Aid Highway bridges with projected ADTT up to 500.

A Non-Federal Aid Highway is any highway that is classified as a Local Road or Rural Minor Collector.

1.44.1 ALTERNATIVE DESIGN CRITERIA - (NON - FEDERAL AID HIGHWAY BRIDGES WITH PROJECTED ADTT TO 500)

1. The following Sections of the AASHTO Standard Specifications for Highway Bridges, as modified by Section 3 of the this Manual, shall be followed. However, the Load requirements shall only be increased by 10% instead of 25%.

Section 3 - Loads

- 3.7.2 - Classes of Loading
- 3.7.3 - Designation of Loading
- 3.7.4 - Minimum Loading
- 3.24 - Distribution of Loads & Design of Concrete Slabs
- 3.25 - Distribution of Wheel Loads on Timber Flooring
- 3.29 - Moments, Shears and Reactions

Section 9 - Prestressed Concrete

- 9.13.1 - Design Theory and General Considerations
- 9.15 - Allowable Stresses

Section 10 - Structural Steel

- 10.6 - Deflection
 - 10.14 - Camber
 - 10.23 - Welding
2. Article 10.3.2.1 of AASHTO and the changes to this article that are made by the NJDOT Design Manual shall be modified as follows:

The number of cycles of maximum stress range to be considered in the design shall be Case II from Table 10.3.2A for all vehicular bridges regardless of type of road.

3. Other considerations that are applicable to the alternative design criteria are as follows:
 - a. Design shall be made with reference to service loads and allowable stresses provided in Service Load Design (Working Stress Design) Criteria.
 - b. Bridge geometry shall be in accordance with AASHTO or FHWA approved 3R Standards where applicable.
4. The 1996 Standard Specifications for Road and Bridge Construction shall be used in conjunction with Special Provision requirements.
5. Beyond these requirements, the AASHTO Standard Specifications may be followed.

The alternative design criteria or the overall design policy of this Manual, is to be used at the option of the local authority.

1.44.2 DECK SLAB THICKNESS AND REINFORCEMENT STEEL TABLES FOR ALTERNATIVE DESIGN CRITERIA

1. The following table for one course construction meets the MS18 + 10% alternative live load criteria for Non Federal Aid Highway bridges with projected ADTT to 500.
2. This table, based on 65 millimeters top cover, 25 millimeters bottom cover, and rebars perpendicular to traffic with $f_c = 9.8$ megapascals and $f_s = 165$ megapascals, has been prepared in order to establish uniformity in design and details. However, the designer shall develop the design of the slab for each bridge and the calculations shall be included in the design folder.

ONE COURSE CONSTRUCTION

FOR DESIGN LIVE LOADING MS18 + 10%		
EFFECTIVE SLAB SPAN (S)	SLAB THICKNESS	REINFORCEMENT STEEL (TOP & BOTTOM)
1.22 m to 1.60 m	215 mm	# 16 @ 200 mm
1.60 m to 1.85 m	215 mm	# 16 @ 175 mm
1.85 m to 2.04 m	215 mm	# 19 @ 225 mm
2.04 m to 2.27 m	215 mm	# 19 @ 175 mm
2.27 m to 2.40 m	215 mm	# 19 @ 150 mm
2.40 m to 2.55 m	220 mm	# 19 @ 150 mm
2.55 m to 2.69 m	225 mm	# 19 @ 150 mm
2.69 m to 2.84 m	230 mm	# 19 @ 150 mm
2.84 m to 2.00 m	235 mm	# 19 @ 150 mm
2.99 m to 3.13 m	240 mm	# 19 @ 150 mm
3.13 m to 3.28 m	245 mm	# 19 @ 150 mm
3.28 m to 3.42 m	250 mm	# 19 @ 150 mm